

**Cosden Oil and Chemical Co.  
Calumet City, IL**

Draft Risk Assessment  
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September 5, 1996



**I. Purpose:**

This memorandum presents preliminary findings regarding potential human health risk at the Cosden Oil and Chemical Co. site (the site) and is based upon the Expanded Site Inspection Final Report, Cosden Oil and Chemical Co., Calumet City, Illinois, November 9, 1995. The purpose of this memorandum is to identify any human health risks at the site through the identification of contaminants of human health concern as well as exposure pathways. In addition, this assessment will identify any data gaps and the resulting assumptions required to assess risk.

**II. Background:**

The Cosden site is an inactive chemical and plastic manufacturing facility located at 142nd Street and Paxton Avenue in Calumet City, Cook County, Illinois, in Township 36 North, Range 14 East, Section 1. From 1949 until 1990, the Cosden facility manufactured a variety of products including formaldehyde, aqua ammonia, hexamethylenetetramine (hexamine), polyethylene emulsion, and polystyrene plastic. Several steel above-ground storage tanks were used to store products and wastes from about 1978 until 1992. Facility records indicate that all wastes generated onsite were sent offsite for treatment, disposal, or recycling; no onsite disposal allegedly occurred.

The site is inactive and has been since it was shut down in 1990. Site runoff flows to the Little Calumet River, the ditch along the southern site boundary, and the sanitary sewer.

**III. Data Gaps**

The soil samples taken at the site represent contamination levels at between 6 and 12 inches beneath the surface. In contrast, exposure is most likely to occur to the first three inches of surficial soil. This risk assessment uses the data presented in the ESI and assumes that these data are representative of surface soil.

Soil vapor monitoring conducted onsite in 1987 revealed high levels of ethylbenzene and styrene. During 1995 ESI field sampling activities, no air sampling was conducted. Air monitoring with a flame ionization detector during sampling, however, showed no readings above background. Direct release of significant amounts of hazardous vapors to the air pathway from the facility is considered to be unlikely. The facility is inactive and hazardous wastes and products were removed from the site during dismantling activities.

It is likely that people consume fish caught in the Little Calumet River. Fish consumption

has been known to drive human health risk along rivers and it is possible that fish consumption could be a risk driver on this site. This assessment does not consider fish contamination data and therefore is not complete for this exposure pathway.

#### IV. Exposure Pathways:

In order to evaluate potential human health risk(s) that could be occurring at the site, various exposure pathways were considered. This assessment considers contamination data for soil and sediment and surface water. The chemicals of concern (COC) were identified by scanning the level of contamination by various compounds in the soil, sediment and surface water to determine whether contamination by any of the compounds was high enough to suggest possible human health risk. Exposure to groundwater was considered to be an incomplete pathway due to the assumption that no one is drinking the groundwater.

A screen of soil contamination yielded no COC's. A screen of surface water contamination yielded no COC's. A screen of sediment contamination yielded one COC: beryllium. This risk assessment uses the maximum detected level of beryllium in sediment and assumes that an individual is being exposed to this level of contamination. If the individual is exposed equally to all levels of contamination found on site, his risk would be less than that calculated here.

The current exposure pathway is assumed to be trespasser. This assessment assumes that a trespasser would have his hands exposed to sediment 10 days per year for 25 years. A possible future use scenario for the Cosden site would be the conversion of the site to an active industrial facility. In order to calculate risk from this future use scenario, exposure assumptions for a worker are used. Specifically, the risk assessment assumes that a worker would have his hands exposed to sediments 25 days per year for 25 years. These exposure assumptions are likely to be conservative.

Sediment was contaminated with beryllium. Incidental ingestion of sediment was determined to not be a major route of exposure, due to the relatively low level of direct sediment ingestion which is likely to occur. Thus risk from contaminated sediment was calculated using a dermal exposure equation.

Another possible exposure pathway for dirt is dust inhalation. This pathway is not considered in the current assessment primarily due to vegetation in the area and the fact that the site is not frequently trafficked. If, for some reason, dust becomes an issue at the site, it would be advisable to assess this pathway.

COSDEN.XLS

		<b>Conc Sed (mg/kg)</b>	<b>Surface Area-hands (cm2)</b>	<b>Conversion Factor (kg/mg)</b>
<b>worker:</b>	<b>beryllium</b>	1.5	840	0.000001
<b>trespasser:</b>	<b>beryllium</b>	1.5	840	0.000001

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<b>Adherence Factor (mg/cm2)</b>	<b>Absorption</b>	<b>Exposure Frequency (days/year)</b>	<b>Exposure Duration (years)</b>
1	0.001	25	25
1	0.001	10	25

<b>Body Weight (kg)</b>	<b>AT-cancer (days)</b>	<b>AT-noncancer (days)</b>		<b>Sediment</b>	<b>Cancer Intake (mg/kg-day)</b>
70	25550	9125		beryllium - worker	4.40313E-10
70	25550	9125		beryllium - trespasser	1.76125E-10

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<b>Cancer Slope (kg-day/mg)</b>	<b>Cancer Risk</b>		<b>Sediment</b>	<b>NC intake (mg/kg-day)</b>	<b>RfD (mg/kg-day)</b>
4.3	1.8933E-09		beryllium - worker	1.23288E-09	0.005
4.3	7.5734E-10		beryllium - trespasser	4.93151E-10	0.005

NC Risk
2.47E-07
9.86E-08